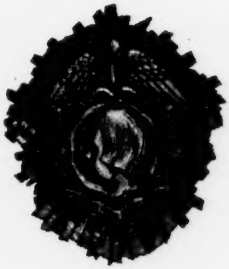
Journal of Dentistry for Children



SECOND QUARTER 1946

Journal of Dentistry for Children

PUBLISHED BY THE AMERICAN SOCIETY
OF DENTISTRY FOR CHILDREN

ALFRED E. SEYLER, *Editor*
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Are Dental Cripples Inevitable?*

Roy G. Ellis, D.D.S., M.Sc. (Dent.)

Professor of Operative Dentistry, Faculty of Dentistry, University of Toronto
Toronto, Ont.

Editor's Note:

Roy Ellis must be the intelligent, serious man his article in our Journal leads us to believe, for I could find out very little about him from my Canadian friends here in Detroit except that when he arrived in Toronto from Adelaide University in South Australia, he brought along a boomerang, a pet Koala bear, and a bottle of eucalyptus oil—all native products of Australia—and guaranteed by his friends to help him survive the hardships of Toronto University! Those charms, plus his innate intelligence and energy, enabled him to obtain his D.D.S. in 1929 and his M.Sc. in Dentistry some years later for his work on Electrodeposition. A full-time teacher at Toronto University since 1931, he is now Professor of Operative Dentistry and Director of the Clinic. He is an active member of the C.D.A., and author of the text "Classification and Treatment of Injuries to the Teeth of Children," recently reviewed in our Journal. We consider it a distinct pleasure to present him to our readers.

A.E.S.

I. Definition of a Dental Cripple

(a) *Definitions:* "Dental"—according to a reliable dictionary—means "pertaining to the teeth or to dentistry."

"A cripple"—according to the same source is—"a lame person—one who is partially disabled—one who is deprived of the proper use of a limb."

"A Dental Cripple"—therefore—is one who is partially disabled as it relates to the teeth, or one who is deprived of the proper use of the teeth.

(b) *Examples:* Let me give you some obvious examples with illustrations.

(i) The case of premature loss of permanent teeth without their restoration by artificial means. (Fig. 1).

One author[1] has stated that for the majority of us "our mouths are 10-20 years older than the rest of the human body." The illustration (Fig. 1) shown must convey to you this idea. Function, speech formation and aesthetics are interfered with considerably. If this individual's limbs were in relatively the same state of debility as his dental apparatus he would be designated a cripple. Hence, we believe the application of the term "dental cripple" to this individual is justifiable.

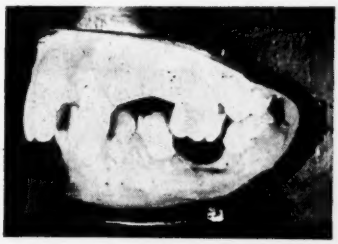

FIGURE 1
A Dental Cripple (adult)

But you will say, this is an extreme case which you have used to illustrate the point. That may be so in terms of your practice, but you have heard it stated many times, that not more than 25%-30% of the population receive adequate dental care such as you render to the patients in your practice. Among the remainder, dental cripples are very numerous.

*Presented before a combined meeting of the Toronto Academy of Dentistry with the section of Pediatrics, Academy of Medicine, Toronto, as a part of a symposium on Dentistry for Children, and also before the Hamilton Academy of Dentistry.
Published concurrently with the Journal of the C.D.A.

Consider for a moment the statement of a U.S. writer[2] when he refers to the men inducted into the U.S. armed forces; "In the recent world conflict when men were first inducted into our armed forces, out of 900,000 selectees, 186,000 were rejected because of dental defects. The requirements were that a man should have 3 upper anterior and 3 lower posterior teeth in contact to pass the dental examination." That is 20.9% or almost ¼ were rejected because they were dental cripples. "This group represented the flower of our young manhood of the nation."

Over retention of deciduous teeth may have a profound influence in the creation of malocclusion. As an illustration, you may recall cases where the deciduous centrals have been over-retained, through failure of normal root resorption. The result of this condition is invariably eruption of the permanent central and laterals too, in linguo-version.

(iii) *Dental Cripples—through malocclusion and irregularity of teeth.*

It is the considered opinion of many outstanding students of dentistry that probably

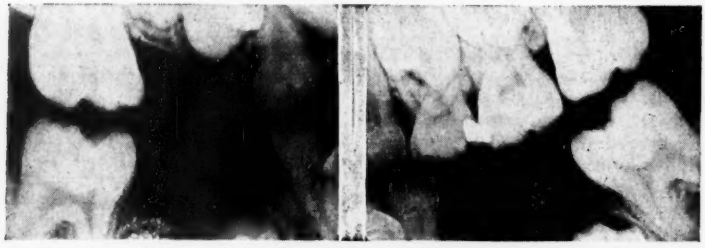

FIGURE 2
Premature Loss of Deciduous Molars at age of 7

(ii) *Dental Cripples—through premature loss and over retention of deciduous teeth.* (Fig. II).

The loss of the deciduous molars at the early age of seven means loss of function, loss of vertical support, (for the bite is now held open by the erupting first molars) and more seriously a collapsing of the arches through drifting and tipping of the erupting teeth and closure of the space into which the bicuspids are to erupt 2-3 years later. Just what the case will look like when all the developmental forces have ceased to function and all the permanent teeth are in place it is impossible to say; at present the child cannot possibly masticate its food properly, the food therefore cannot possibly be mixed with saliva to initiate the digestion of the carbohydrates because it isn't held in the mouth long enough; furthermore, thinking of the future, the present indications are that this child must be considered a potential dental cripple for the future, through malocclusion.

"50% of all malocclusions and facial deformities arise from simple, minor and environmental causes."[3] Premature loss of the deciduous teeth and failure to use space maintenance when necessary are reported by Dr. Don. C. Lyons of Jackson, Mich., to be responsible for 65% of instances of malocclusion. In other words, we can assume that if we could control dental diseases responsible for the premature loss of deciduous teeth we could eliminate the development of a large group of potential dental cripples at the outset.

Some of the factors which interfere with the normal growth and development of the teeth and jaws are minor at the outset and even temporary, but once the complicated process of dental development has been interfered with, recovery is difficult and the very forces of nature which normally are constructive, may become destructive, because the initial minor disturbance having once become established develops into a major factor for

malocclusion. It is possible that we let many incipient cases of malocclusion develop unrecognized in our practices.

Premature loss of deciduous teeth is but one factor in the development of malocclusion. "The aetiology and prognosis of many malocclusions is unknown."[3] Constitutional disturbances, nutritional deficiencies and inherited characteristics are among the more complicated aetiological factors involved in the development of malocclusion.

An interesting contribution has been made by geneticists relative to heredity as a factor in the cause of malocclusion.[4] "Hellman has shown, in the case of the permanent dentition, that there is a striking difference in the sequence of eruption between normal occlusion groups and malocclusion groups. For example, children with malocclusion begin to erupt their permanent teeth earlier and finish the process later than do those with normal occlusion. Moreover, the first tooth of the permanent set to erupt in the malocclusion group is on an average the lower central incisor, while in the normal group it is the lower first molar. Besides in the malocclusion group the upper first molar precedes its lower partner."

Doctors Norma Ford and A. D. A. Mason[4] studied the Dionne Quintuplets tooth eruption pattern and report as follows: "That the first permanent teeth of the quintuplets to erupt were consistently the lower central incisors."

"That the upper first molars preceded the lower first molars."

"The fact that a common pattern in the order of eruption of the teeth can be traced among the Dionne quintuplets suggests that this pattern may be an inherited one."

Finally, "The inherited characteristics were traced back to the deciduous dentition."

Is it not likely that within a few years with the enlargement of the knowledge already gained in this field of heredity it will be possible to predict with some degree of accuracy the probability of the development of malocclusion, for each child, if the eruption pattern is known, not only of the permanent teeth but of the deciduous teeth?

(iv) *Dental Cripples — through aberrations in the number of teeth which develop.* (Fig. III).

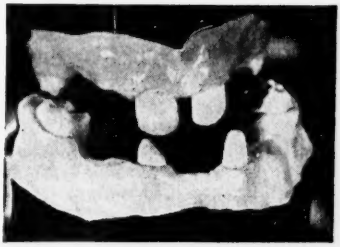

FIGURE 3
Congenital Absence of Teeth

As the result of a disturbance within the early stages of the developmental process of tooth formation this child is missing 24 teeth congenitally. Function, aesthetics and speech formation are grossly interfered with — the child is a dental cripple without question.

Thus we have considered the four examples of the development of dental cripples namely:

(i) Through premature loss of permanent teeth without their restoration (adult).

(ii) Through premature loss and over-retention of deciduous teeth.

(iii) Through malocclusion and irregularity of teeth.

(iv) Through aberrations in the number of teeth formed.

Thinking now in terms of the child, you might well ask the question:

II. What Evidence is There of the Development of Dental Cripples among Present Day Chidren?

In your practice you see children whose dental development is normal and you strive to maintain the normal, by systematic attention. Let me remind you, however, that the number of children who receive adequate attention in this way (which includes more than merely filling holes), is but a small fraction of the total. To answer the question asked, let me cite two surveys.

Recently 12 children whose ages averaged 9½ years, were selected at random from the membership of the K. Club of Toronto, and were examined in the presence of two prominent members of this Academy. These chil-

dren were not likely to have been privileged to have received dental service in dental offices, but on the other hand, they were not from the most underprivileged homes in the city of Toronto. They had received some dental treatment through the school dental services. Eleven of these twelve children had gross disturbances (apart from dental caries) in their dental developments, which would place the majority of them in the category of potential dental cripples of the future.

Here is what we would like to see at the age of 7½ (years). (Fig IV).

Unless something is done soon for the child seen in Fig. V he is a potential cripple in the future through malocclusion.

The second survey I wish to cite is that which was made among the Primary School children in the Porcupine District of Northern Ontario, Canada. This survey was conducted by the Dental Public Health Committee of the O.D.A. in collaboration with the R.C.D.S. Board of Ontario and is reported by Dr. T. R. Marshall in J.C.D.A. May, 1945. I had the privilege of being present in Timmins when this survey was begun and of seeing the mouths of many children who were examined.

Porcupine District Survey—1945 Space Maintainers Required

72 Five Yr. Olds—144 Space Maintainers. 42% of the Total but they need 130 foundation teeth extracted also.

100 Six Yr. Olds—138 Space Maintainers. 61% of the Total but they need 217 foundation teeth extracted also.

71 Seven Yr. Olds—170 Space Maintainers. 43% of the Total but they need 261 foundation teeth extracted also.

61 Eight Yr. Olds—140 Space Maintainers. 40% of the Total but they need 201 foundation teeth extracted also.

There are potential dental cripples in that district by the hundreds.

Perhaps you will protest, that this is not representative of all large cities or many other areas you could name, and I will hasten to agree with you. It does indicate the respon-

FIGURE 4
Healthy Mouth at 7½ years of age

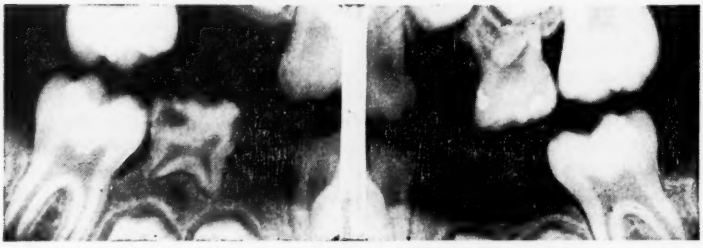

FIGURE 5
Potential Dental Cripple at 7½ years of age

sibilities which we as a dental profession accept as custodians of the dental health of our people. Oliver has aptly stated,[3] "The majority of children with dental diseases if untreated, not only become dental cripples, but worse, have their general health penalized and often seriously impaired."

We have not yet reached the stage when we can prevent dental diseases, so that our program necessarily becomes, one of "protection" against the ravages of dental diseases. In a survey of the Guggenheim Clinic in New York City,[5] it was revealed that the following conditions existed among new, very young patients.

Guggenheim Clinic—1941

Age	— 3	—4—	5
No. of Patients	—116—	—212—	—385
Per cent with Cavities	— 60—	75—	80
Aver. No. of Cavities	— 2.3—	3.5—	4.2

Therefore, if our program is to be "fully protective," it must commence with the very young child. Furthermore, if our program is to be successful we, as members of the dental profession, must recognize the importance of not only the environmental influences within the mouth, but also the nutritional, constitutional, and factors of heredity. Many cases require the most sincere cooperation between the dentist and the paediatrician, before treatment is instituted. "The well being of the whole child is the basic consideration."[6]

III. Program for the Future

If we are to make any progress in our struggle for the elimination of "dental cripples" the program devised must be founded on the development of preventive measures and in the meantime, action of a "protective type."

(a) *Protective Dentistry*

As I see it, an active program of "protective dentistry" commences very soon after the birth of the child. While ante-natal care of the mother and child is the responsibility of the physician, the oral health of the mother is important. Every expectant mother should be made dentally fit and recalled for re-examination at 4-6 month intervals during the pregnancy and nursing period. The dentist should be included in ante-natal clinics wherever possible.

During the first few months of the child's life active participation of the dentist in the health program for the child, may appear superfluous. However, discussion with the parent on the care of her own teeth and those which the child will soon have, would be of great value. Education, relative to the teeth and oral structures, made a somewhat individual matter in this way and at a time when the mother is most concerned about the welfare of her child, would have a profound effect. Is it not possible that many of the new children and their mothers could be contacted through the city-wide "Well Baby Clinics?"

Again let me refer to the 12 Kiwanis children who were examined. We requested that each child bring his or her toothbrush along and demonstrate how it was used. I wish you could have seen the motley collection which were presented and how they used them. Oh, we can talk all we like on how to use a toothbrush, but a good practical demonstration would go a lot further. The initiation of this practical instruction should be given to the mother in the "Well Baby Clinic," and then to the preschool child as the time came due.

Let me suggest then five phases in the program I foresee.

1. The child pays his first visit to the dentist in the "Well Baby Clinic" or preferably in the dentist's office. At this time the visit is an educational one for the parent. It is devoted to an examination of the mother's oral condition and instruction on the importance of the child's first teeth, and the care of them. Discussion of nutrition, in collaboration with the paediatricians is also covered at this time, both as it relates to the mother and to the child.
2. Through the medium of an accurate recall system the child and parent are recalled for re-examination and further education at regular intervals, possibly every six months and more often if it is found necessary.
3. The child grows up with regular periodic visits to the dentist, having his teeth cleaned at intervals. In this way his first visit is not one demanded by toothache, which is all too frequent, and often a dis-

astrous initiation to the dental office. To the parent of the child, the regular periodic visit to the dentist is a well established habit by the time the child reaches the age of marked susceptibility and certain fundamental dental education has been given on a very practical individual basis.

4. If we recall the table showing the figures from the Guggenheim Clinic, dental caries is a profound reality with the preschool child, long before he reaches the school era and the benefits he might derive from the school dental service. Therefore, in conjunction with the "Well Baby Clinics," for the older preschool children of parents who cannot afford to seek the services of the family dentist, provision should be made for complete "protective" dental service required by the 3, 4, 5 or 6 year olds. If all parents of these children could be persuaded to go to the family dentist, so much the better. However, wherever the service is given, success for the scheme is based primarily on two factors:
   (a) Getting started early enough.
   (b) Following a rigid recall system, so that the service is complete.
5. The natural extension of this program to the school era should be relatively simple. Success would still be dependent on giving a complete protective dental service (not just one of filling holes and extracting teeth).

Now I can almost hear some of you thinking out loud and saying that the idealistic program outlined is utterly impractical and the dream of a theorist. Maybe you are right, but let me think out loud too, and add my thought that the present scheme we are following, with no dentist attached to the "Well Baby Clinics" and insufficient preschool dental attention for those children who do not find their way into your office and a dental service in the schools which is definitely better than none at all but is not complete and too extensive to make it complete because of the backlog of accumulated work, is far more impractical than the program I have suggested.

The program may have to be limited to certain ages at the outset, but once it is established it could be extended to older children. At all times where possible, the service should be given by the family dentist, but failing that, it should be provided for.

In the present program it would appear that there is no hope of overtaking the accumulated needs; there is little educational value unless it is being repeated at regular intervals; the service is not complete in all phases, and what is even more disastrous, in many instances it is relied upon by some parents, but because of the backlog of work on hand, long waiting periods elapse before cavities are taken care of and teeth are often hopelessly involved by that time.

If, on the other hand, the program is commenced very early on a "protective basis" in conjunction with the paediatrician (before the backlog of repair work his accumulated to prodigious proportions) and it is extended into the school system on a regular interval and complete service basis, potential dental cripples among children could be reduced in number considerably. Smug satisfaction with the "Status quo" inevitably condemns some children to the status of dental cripples.

The importance of cooperation with the paediatrician in this program cannot be overstated, because I believe that the systemic factors are of the utmost importance in the aetiology of dental diseases. Such seemingly unimportant factors as fatigue, the mental outlook of the child and his way of life are probably closely related to his dental conditions.

"Therefore any measures that promote the health of the child increase the likelihood of the teeth remaining sound."[7]

Conclusion

If all the difficulties which lie in the way of putting this ideal program into effect were to be dissipated tomorrow, I wonder whether we as dentists would be ready to fulfil our obligations in it. If the answer is "yes" then

we are in a better position than I judge we are. If the answer is "yes" and "no," then I respectfully submit that we could not perform a greater service to humanity, than to initiate and foster a study group on the subject of "Protective Dentistry," which embraces the whole problem that is, both medical and dental in its aspects. If, as the result of our deliberations and constructive planning we became as influential in the prevention of dental cripples as the Ferrier Study Club's of the West have become in the realm of gold foil restorations, the health professions would have reason to be thankful.

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Evaluation of Benefits of Periodic Care

Q.—How effective is it in the prevention of tooth loss?

A.—Strusser and Sandler[1] have studied 397 children, of whom 198 were 5 years old, 172 were 6 years old and 27 were 7 years old, to determine the value of regular dental care. It was found that the children who had received complete dental treatment had an average lost first permanent molar rate of 5.4± 1.9 teeth per 100, while a control group had an average loss of 36.4 ± 3.9 per hundred.

Knutson[2] states that, among those Waynesboro, Pa., children (347 boys and 353 girls, ages 10 to 12 years) who had received maximum dental services, the tooth mortality rate was roughly one-third that of those children who had not received regular treatment in Hagerstown, Md.

Q.—Why are teeth lost?

A.—Teeth are lost due to the following causes: caries (48.8%), periodontal disease (40.7%), impaction (4.4%), preparation for prosthesis (2.8%), orthodontic correction (1.8%), supernumerary teeth (0.5%), trauma (0.4%), surgical involvement (0.3%).[3]

One may conclude that the important causes of tooth loss are dental caries and periodontal disease.

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Secretary's Message

Your Secretary wishes to express his appreciation to the membership at large for the splendid response to the "First Mailing" of the statements for the current year. It is inevitable that a "Second Mailing" is necessary to remind those who have as yet not sent in their 1946 dues, to do so immediately to assure a continued affiliation with the Society and satisfactory arrival of our Journal. Those who are members of State Units will remit their dues together with their State Unit dues through their State Secretaries. Prompt co-operation will be appreciated by all who share with me this official responsibility.

In former "messages" I have referred to the status of our members who were called into the dental corps of our Country, and cited the expressions of appreciation for their gratis memberships during military service. It has been my recent pleasure to receive enthusiastic and hopeful letters from members who are expecting honorable discharges soon and their anticipation of resuming civilian life and private practice. Much has been written as how best to help the returning veteran adjust himself to "civilian ways". All of it has been well intended, but it occurs to me that the assistance to the returning *dentist* presents some additional problems and opportunities. Unfortunately, many will find their former locations taken, and their previous patients moved, dentured, or satisfied with the services of someone else with whom they will continue. Rulings of priority purchases may enable them to equip their offices, and yet they will find themselves in situations comparable to the time of their graduation from school and confronted with the problems of practice establishment.

The prevailing need of greater pedodontic services offers to the returning veteran an exceptional opportunity to re-establish himself in his community of choice. From the smallest communities to the largest cities people of all economic levels are desperately seeking someone who will work on their children. Ex-dental officers who may be attracted to the establishment of a limited pedodontic practice will find it quickly available. Others who may welcome children into a general practice will find appreciative parents who quickly will evaluate a true professional spirit and interest, and desire to place their own dental security in the hands of one who is interested in prevention rather than "crutch service" and mass production. The reclamation of a practice will soon become a reality.

The Society, its members, its subordinate officers, and the officers of the parent body welcome to civilian life these returning professional service men, and wish them the best of success and professional happiness.

R. M. Erwin, Jr.

The New York State Society

FORUM :: LUNCHEON :: MEETING

Wednesday, May 15, 1946, 12:20 o'clock,

Manhattan Room, Hotel Pennsylvania, New York City

A FORUM: "The Profitable Inclusion of Children in Your Practice."

SPEAKER: Walter C. McBride, D.D.S., F.A.C.D.
Director of Pedodontics, University of Detroit,
Author of "Juvenile Dentistry."

DISCUSSORS: Harold Kane Addelston, D.D.S., Assistant Professor,
Department of Dentistry for Children, N. Y. University
Solomon N. Rosenstein, B.S., D.D.S., Assistant Professor,
Division of Pedodontics, Columbia University.
John Oppie McCall, D.D.S., Director,
Guggenheim Dental Clinic, New York City.

LUNCHEON: In the Manhattan Room, Hotel Pennsylvania
Wednesday, May 19, 1946, 12:20 o'clock.

SPEAKER: David B. Ast, D.D.S., M.P.H., Chief of the Dental Bureau,
New York State Department of Health.

TOPIC: "Expanded Dental Care program for 6 to 12 Year Old Children."
A joint program of the New York State Department of Health
and Education.

BUSINESS MEETING AND ELECTION OF OFFICERS

A brief but important business meeting will follow, and election of officers will be held.

We expect the demand for reservations will exceed the capacity of the Manhattan Room and urge that you make your reservations AT ONCE.

FOR RESERVATIONS: Send $2.50 per person, to
Dr. W. James Taub, Sec.-Treas.
609 Western Avenue, Albany 3, N. Y.

PRIVATE PREVIEW: Following the business meeting, there will be a private preview of five highly interesting and instructive Table Clinics on Children's Dentistry, before the regular scheduled presentation at the usually crowded TABLE CLINIC SESSION of the Dental Society of the State of New York. This session will be concluded before the opening of the afternoon clinics of the general meeting.

PROGRAM OF TABLE CLINICS:

Subject: "MODIFIED WILLETT INLAY TECHNIC" (For children's teeth)
Clinician: Harold Kane Addelston, D.D.S., New York City.
Subject: "OPERATIVE PROCEDURES FOR CHILDREN'S DENTISTRY"
Clinician: Solomon N. Rosenstein, B.S., D.D.S., New York City.
Subject: "SUGGESTIONS FOR BETTER SERVING OUR JUNIOR PATIENTS"
Clinician: Guy W. Patterson, D.D.S., Batavia, N. Y.
Subject: "PULPOTOMY FOR DECIDUOUS TEETH"
Clinician: Joseph J. Obst, B.S., M.A., D.D.S., Brooklyn, N. Y.

We cordially invite all members of the A.S.D.C. to participate with us on this occasion. Members of the Association of Dental Hygienists are likewise invited.

W. JAMES TAUB, Secretary.

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Ethyl Chloride as an Anesthetic Agent in Minor Dental Surgery for Children

R. M. ERWIN, JR., D.M.D., Portland, Oregon.

Editor's Note:

We are reprinting Dr. Erwin's article, this time in its entirety, because as it appeared last month, it possessed none of its true message. Our usually accurate personal investigators were quite definitely off the beam last month too—for Mott advises that his piscatorial enthusiasm is limited to the table, and that he prefers to roam the woods with his Irish setter, "Phez," during the hunting season—and that when time and weather permits he loves "to play golf."

A.E.S.

Due to circumstances peculiar to management of minor pedodontic surgical cases most specialists and many general practitioners find it more expedient to perform the surgery under general anesthesia or advanced analgesia.

Many times children present, for whom extractions have been previously attempted with the aid of local anesthetics and unfortunately the experience has not always been satisfactory due to one or a combination of the following circumstances. The operator may have been a bit careless in the introduction of the needle, the solution may have been "pumped" in too fast, causing pressure pain, the site of insertion is incorrect, especially if the patient is not co-operative, and the fact that many times due to the highly inflamed condition of the surgical field the more distantly applied local anesthetic is non-effective. The child then views all other operators with the same degree of distrust and apprehension when they propose the use of local anesthesia.

We can not expect children to anticipate an extraction experience with any particular pleasure, especially the younger patients. Furthermore many times the child has had at least one wakeful night tormented by tooth ache and his nervous system is "a bit irritated."

Because of the aforementioned circumstances the author routinely does the majority of his extractions under general anesthesia of which agents ethyl chloride is the one employed when not contra-indicated by complication of required prolonged anesthesia. The reasons may be summarized as follows. In the first place I am presenting a "different" procedure than the last operator whose efforts proved unsatisfactory, any obstreperousness of spirit is quickly quelled by the "quieting influence" of the anesthetic, the child is unaware of the mechanical efforts of surgery, he has no opportunity to be additionally intimidated by the sight of instruments, and most important, I know that the child is not hurt either by insertion of the needle, or by an anesthetic failure incurred by a missed "target."

As with other volatile anesthetic agents, ethyl chloride anesthesia is brought about through the medium of inhalation of the gaseous molecules, entrance to the blood stream, then carried to the cerebral centers of consciousness and physiologic functions which are at first stimulated, then depressed, by the anesthetizing effect of its chemical qualities. The ethyl chloride is quickly dissipated from the system through the respiratory system both in the process of exhalation and the inhalation of oxygen. Nitrous oxide is not selected due to personal reasons one of which is hereafter presented. In contrast to the anesthetizing processes of other volatile anesthetics, nitrous oxide as it enters the blood stream through the respiratory system has an affinity for the oxygen and additionally displaces the oxygen. Thus through chemical union and displace-

ment the necessary volume of oxygen to maintain consciousness is depleted and finally effects unconsciousness or anesthesia. This in the opinion of the writer is but a form of voluntary asphyxiation as the patients are generally either cyanotic or on the verge of recovery from the anesthetic. It is not the intention of the author to discredit nitrous oxide and its use by these opinions but only to offer a comparison of anesthetizing processes.

Chemically ethyl chloride is known as Hydrochloric Ether witih a formula of CH_3CH_2Cl. It is a colorless, volatile and imflamable liquid.

Like all general anesthetic agents it is first a stimulant to all physiologic functions. Continued induction causes progressive depression, and finally paralysis of vital functions will occur when administered too long, producing too deep a degree of anesthesia. In the process of administration as a volatilized gas it is capable of becoming accumulative within the system causing rapid changes from one stage of anesthesia to another without definite evidence of such except to the experienced anesthetist. Due to this quality it is in general disfavor in contrast to the more acceptable ether agent. For this reason the true stage of surgical anesthesia is not sought, but rather a stage of light to advanced analgesia in which stage there is no danger. The choice of depth being determined by the age and the surgery to be done.

During my interneship there, in 1934-35, I noted that ethyl chloride is the general anesthetic of choice at the Forsyth Dental Infirmary for Children in Boston for most cases of minor dental surgery of children within their 12th physiologic year of age and younger. This is true of cases requiring only short periods of anesthesias. Dr. Max Jacobs who has been head of the department of anesthesia in Forsyth reported in the Journal of the A.D.A. September 1936, a 200,000 series of ethyl chloride cases most of whom were from the lower economic strata, and due to clinical routines were not given physical examinations to determine physical acceptancies of the cases for general anesthesia. Of these 200,000 cases there was not experienced a single fatality. The majority of these anesthetics was routinely administered by inexperienced student internes as current graduates from the dental colleges of the United States and Canada and acquiring their proficiencies in the department.

Ethyl chloride is favorably referred to by the authors of the three leading pedodontic text books. "Juvenile Dentistry", by Dr. Walter McBride of Detroit, Michigan "Dentistry for Children," by Dr. John C. Brauer of Iowa City, Iowa, and "Practical Pedodontia," by Dr. Floyd E. Hogeboom of Los Angeles, California. These and other nationally recognized practicing pedodontists routinely use ethyl chloride as indicated in their opinions as an agent of analgesia.

In the interest of safe procedures in the hands of the inexperienced, certain principles and observations of principles were presented and emphasized at Forsyth which, when followed resulted in the 200,000 case report referred to earlier. Deviations from these rules may be taken, but in the hands of other than trained and experienced anesthetists an adherence thereto is recommended, and when followed will make minor dental surgery for children a reasonably simple procedure for the operator, child patient, and parent.

Greater liberty may be taken in regard to immediateness of the last ingestion of food. Usually the child may have its meal and present for an ethyl chloride anesthetic in an hour and a half. If the extraction is anticipated at the making of the appointment restriction of eating may be observed. Upon arrival the child is sent to the lavatory to evacuate the urinary bladder during which time the necessary equipment is made ready.

The equipment is simple and inexpensive, consisting of the following: an eight inch length of four inch gauze bandage which is folded to make a double thickness four inches by four inches, a rubber mouth prop of acceptable size with a string attached, a 100 gm. glass tube of ethyl chloride with a "lift valve," and the necessary surgical instruments. During the absence of the child the instruments are placed within the fold of a sterile towel, and the length of gauze, rubber mouth

prop, and tube of ethyl chloride placed on top.

It is best to explain to the parent that the depth of anesthesia sought is not that sought for major surgery but rather light "like a person in a drunken stupor," that they generally do not become nauseated, and that some times the child may wiggle or cry at the time of operation but that it is like "talking in their sleep," a reflex. Explanation here is acceptable, later it would be an alibi.

Place the child in the chair, adjust the back upright to the seat and then easily tip the chair back as far as it will go. This will assist in preventing the child from slipping down in the chair. Explain to the child that you're going to give him a nap long enough to snore about twice. Place the mouth prop with the explanation that it will keep him from biting his tongue while he is asleep. Standing at the right rear position of the chair with the child's head to your left side place the gauze bandage over the open mouth and hold in place with the left hand, the fingers being spread widely, that the little finger is under the chin, the next finger over the chin, the next finger over the upper lip, and the thumb and fore finger pressing the nostrils closed. At this stage the child is told to "blow" at which time the ethyl chloride is applied to the bandage. Explain that the ears may hum a little or that they may hear a ringing noise.

Some operators hold the ethyl chloride at arms length from the mouth and spray it on from a distance. The author has found it more desirable to hold the tube close to the mouth and open the valve to permit a "drop" application, applied at an interval of about a second apart. If the gauze frosts, no more is applied until cleared by the patient's breath. As symptoms of desired depth approach or if the child begins to move some the author places his right leg up over the top of the right arm of the chair, across the lap of the patient and the shin slipped under the fore arm of the left arm of the chair anchoring the instep under the elbow of the cuspidor as it comes from the unit. Restraining straps are not used as they would contribute to timidity. The assistant has then only to hold the left wrist of the patient. As the desired symptoms are attained the gauze is given another few quick drops and then lightly thrust into the mouth back of the field of operation NOT as a throat pack but rather as a throat screen. This also helps to continue the anesthetic a bit longer.

The above is the procedure outlined for the co-operative patient. Those who cry and resist are simply put in the chair and no time wasted in explanation. The leg treatment is immediately employed and the anesthetic deliberately given. The average operator may be tempted to hurry his anesthetic for this type of patient, but if anything it should be given a bit slower as the crying will result in the inhalation of larger quantities than normal respiration of the well behaved child, with the result that the child will be capably resisting and all at once be in a stage of analgesia and due to accumulative action progress rapidly into the deeper stage and into the surgical stage which is not desired. Don't be in a hurry to get the child quiet as the anesthetic will effect that end quite expediently.

Listed hereafter are the additional summarizing considerations of ethyl chloride an adherance to which is recommended for the novice and an assurance that no apprehension need be felt regarding the safety of ethyl chloride used as an analgesia agent. Ethyl chloride is not approved by the author as a "local anesthetic" as satisfactory refrigeration to produce numbing is in itself painful and also distasteful in the mouth.

The advantages of ethyl chloride over other general anesthetic agents:

1. Rapid action; i.e. production of anesthesia.
2. Rapid recovery; i.e. elimination of anesthetic agencies.
3. No prolonged postoperative time; retiring rooms not needed.
4. Generally no stimulation to the vomiting centers when the proper depth of anesthesia is obtained.
5. Simplicity of equipment i.e. Ease of administration and production of less mental unrest of child.
6. Inexpensive.

Disadvantages:

1. Does not produce a prolonged period of anaesthesia.
2. Additional quantities should not be administered if the patient shows signs of recovery before the completion of the operation.
3. Re-administration within the same period of twenty-four hours is not advisable.
4. Should not be given to children over the physiologic age of 12 years. (Likely relationship to unknown persistent thymus cases.)

Indications:

1. May be used on any child whose physical condition permits the use of any general anesthetic and whose age does not exceed the physiologic age of 12 years.
2. Especially indicated for all cases below 8 years due to the psychology of the situation.
3. In the presence of inflamed and infected surgical fields.
4. For those cases beyond the age of 8 years and up to the physiologic age of 12 years from whom co-operation can not be expected or obtained.

Contra-indications:

1. There are no contra-indications peculiar to ethyl chloride alone. Sensible observations of the rules controlling the use of any general anesthetic for an individual are the only limitations.
2. The age limit beyond physiologic age of 12 years is the only exception. The older children, as the adults, would require such quantities that when sufficient amounts are given to accomplish the desired degree of anesthesia it may become toxic in such amounts.

Cautions:

1. Observe factors of disadvantages and contra-indications.
2. Never seek a depth of anesthesia beyond that of second degree anesthesia (depression or analgesia.)

Classification of stages of anesthesia according to descriptive physiologic response:

1. Stimulation ..... excitement
2. Depression ..... depression, analgesia
3. Pre-paralysis ..... surgical
4. Paralysis ..... danger

Stage sought with ethyl chloride:

The stage sought is that of depression, analgesia, or the second stage, and within the range of early onset to the middle of and never deeper than the later phase of that stage.

Signs of desirable depth of ethyl chloride anesthesia:

1. Strabescent eye balls.
2. Absence or sluggishness of eyelid reflex.
3. Presence of pupillary reflex (light reflex).
4. Relaxed shoulder joint muscles (not true muscular relaxation—elbow may still be slightly rigid).
5. Regular breathing established, usually preceded by a diaphragmatic spasm and a momentary cessation of respiration.

Signs of too great a depth:

1. Central fixation of the eyes.
2. Complete muscular relaxation of entire body.
3. Absence of pupillary reflex.
4. Shallow respiration.
5. Paleness of patient—lack of normal color.
6. Prolonged degree of recovery.

Editor's Report: February, 1946

In May 1944, the undersigned was apprised of his selection as Editor of the Journal of Dentistry for Children, to work with a newly appointed Editorial Board consisting of Dr. James Gasaway, of Lexington, Michigan; Dr. Stanley Brown, of Ithaca, Michigan, and Dr. C. Ray Taylor, of Lansing, Michigan.

My first reaction to Dr. Ireland's letter was one of pride in the professed confidence in my journalistic ability, a hitherto untried and personally undreamed of, attribute! The next reaction was one of reality and consternation, as the responsibilities of the position became more evident, and tangible in the form of an issue of the Journal to be on the presses within several short—oh so short—weeks!!

However, with the gracious assistance and guidance of Sam Harris, the retiring editor, and Mr. Blake of the Owl Printing Company, printers of the Journal, plus the loss of many more hairs from this already glabellate head of mine, a new format and cover were conceived and executed for our publication, and in August 1944, the new Journal of Dentistry for Children made its appearance.

Accompanying this report is a series of statements indicating the financial and circulation progress of the Journal. An examination will show an increase in the cost of publication (the first 2 issues of 1944 published by Dr. Harris, and the last 2 issues of 1944 and 4 issues of 1945 published by myself) of 6.1 cents per copy. I believe the increased cost is in line with the general trend of costs and quite justifiable in view of the fact that illustrations and cuts are now used in articles accepted for publication, where necessary and requested by the authors.

Circulation has risen from approximately 550 copies to approximately 725 copies per issue, an increase of some 30%.

During 1945, the Editorial Board sanctioned the solicitation of four selected advertising accounts, and the Journal now contains dignified advertisements of the Pycope Company, the Columbia Dentoform Corporation, P. N. Condit, and the Crescent Dental Manufacturing Company. The income from this source tends to offset the increased cost of publication due to illustrations accompanying articles.

The Council of the American Society of Dentistry for Children, voted in 1945, a sum of $100.00 per year to the Editor's office, such amount to cover secretarial services, postage and incidentals. Obviously it cannot be considered a salary.

It is interesting to note that the mailing list of the Journal embraces individuals from such far off points as South Africa, Syria and Egypt. As peace returns all over the world, the outposts of dentistry for children may become busier and more numerous, and our Journal an even more forceful instrument for the dissemination of opinion and knowledge. It was unfortunate that many of our members in the Armed Forces did not receive their copies of the Journal regularly, but this is understandable in view of postal regulations which do not provide for forwarding of certain types of mail to changed addresses, and the elimination of overseas delivery of third class mail unless specifically requested by the addressee.

To the very cooperative members of my Editorial Board, Doctors Gasaway, Brown and Taylor, to the official family of the American Society of Dentistry for Children, and to the membership at large I express my appreciation of their understanding cooperation; to each and every contributor; to my helpful friends Ken Easlick and Walter McBride; and to my efficient, understanding Secretary and helpmate, Louise, my sincere gratitude for their assistance, without which I could not carry on.

Respectfully submitted,

ALFRED E. SEYLER.

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AROUND THE COUNTRY

Chicago

Resting after the Chicago meeting we reflect just a bit.

Over 13,000 registered at the close of business Wednesday night. There can be no question regarding the size of the meeting even though one heard both pro and con regarding the program.

The children's section was most capably handled by *Claude Bierman* of Minneapolis; A.S.D.C. *President Ralph Ireland* of Lincoln, and *George Teuscher,* Chicago. Operative and child management was well handled by these three men. Lacking, as the writer sees it, was the practice stabilizing and economic factors which revolve around dentistry for children in the general practice.

The writer was also a bit disappointed by the "brush off" or disregard of children's dentistry by the men covering office practice and dental economics. One speaker on the subject was asked, "What do you consider the most stabilizing factor in a general practice?" His answer, "good economics." Well, he was right, if economics were interpreted correctly as dentistry for children. But the speaker had entirely overlooked children's dentistry in his presentation and his answer conveyed but one meaning—"make money or else."

Here and there at the meeting we ran across many of our old and new friends. At the early morning breakfast we found *Ken Easlick, Bill Davis, Hank Gerber,* all from Michigan. From Toronto was *Gordon Johnston,* assisting in the new Department of Dentistry for Children at the University. On the return home we found several more Toronto boys—in one of those "quiet please" train compartments. *Harold Swales,* President , Academy of Dentistry; *Chuck Williams,* Professor in Periodontology, University of Toronto.

From Cleveland we saw, heard and enjoyed our good friend and membership "salesman" *Carl Miller. Carl* "packed them in" with his most practical clinic on amalgam work. *Carl* feels that if we would "dam" the tooth in place of the child we would have less child management problems. "Damned" if he may not be right!

Ralph Creig is another Clevelander who seemed to pop up at every session. *Ralph* is a master when it comes to acting as toastmaster. At the Cleveland Children's Dental Health Day noon luncheon the writer watched *Ralph* present some forty guests, without a single mistake or the aid of notes. Not only that, his presentation speech was perfect—a good beginning, a good ending—and both close together!

Al Sadd of Cleveland, co-chairman of the Cleveland meeting, was also at the meeting. These three men, *Carl, Ralph* and *Al* were busy checking talent at Chicago for the 1947 Children's Health Day.

Not so long ago we reported that *John Brauer* had gone "Hollywood." *John* was in uniform then and assisting in the production of an A.D.A. film, but is in "civvies" now, located at 3780 Wilshire Blvd., Los Angeles. Power to you, *John.* Hollywood is but a short step from Los Angeles.

In and out of the convention hotel (supposedly on business) we bumped into *Ray Taylor,* who has been one of the leaders in public health dentistry for a number of years. He leaves the Division of Dentistry, Michigan Department of Health, April 1st. The department is losing one of its most efficient leaders of dentistry for children. We hope *Ray* remains in Michigan and gives dentistry the influence of his knowledge and ability in promoting the field of children's dental health.

Around the poker table or at night spots we could always find *Editor Al Seyler, Ralph Campbell, Wier Burkman, Tommie Thompson, Arnold Labbe,* all from Michigan. (These Michigan boys do get around—at least at night).

In the conference rooms or at technical clinics we found *Ken Easlick,* member of so many health or children's committees we dare

not mention them for lack of space; *Louie Schultz,* the boy who is a master with the Dale Carnegie technic of "Influencing People" and "Making Friends"; *Lon Morrey* of the Public Health Relations Committee and *Allen Gruebbel,* Executive Secretary, Council of Dental Health, could be found with the handshaking groups about the halls. These men are good public relations experts for the A.D.A. and our A.S.D.C.

The writer understands that our good friend *Walter McFall* was on hand too, but it was my misfortune not to see him. We missed *Charlie Sweet* and *Walter McBride.* Can understand why *Walter* would prefer to remain in Detroit with his charming new bride, but *Charlie* is an "old hand" and usually attempts to renew his youth at the Chicago meetings.

Of importance to all of us is the new manual on dentistry for children now being assembled at the A.D.A. offices. *Lon Morrey* is the "leg man" on the job and he tells me "it won't be long" before every member of the A.D.A. will have a practical manual of practice procedure for children's dentistry. As to be expected, members of the A.S.D.C. are contributing generously to the subject matter.

Cleveland

The sixth annual Children's Dental Health Day meeting in Cleveland, February 4th became a national event. At the noon luncheon *Dr. Sterling Mead,* Pres.-Elect, A.D.A. assisted by *Dr. Leon Newman,* Pres. Cleveland Dental Society, and *Dr. H. C. Janke,* General Chairman, participated in a nation-wide radio hook up. Who knows—perhaps this meeting will inspire an annual National Children's Dental Health Day.

Perhaps the unsung "hero" of the meeting was *Carl Miller.* In his genuinely sincere manner he played an important part in making the clinicians feel at home. As this meeting is an institution to Children's Dentistry, *Carl Miller* is a pillar of inspiration and strength to the meeting.

The Cleveland Dental Society, through its General Chairman, *H. C. Janke,* provided an outstanding program. Publicity chairman *Ralph Creig* did himself proud as evidenced by the largest attendance in the history of the event. *Frank Tuma* was equally busy with his arrangements for several radio programs, including the national hook up. No small job, these radio arrangements!

Essay papers were presented by *Dr. Harry Archer,* Pittsburgh, Pa.,; *Mary C. Crowley,* University of Michigan; *Dr. Ernest F. Ritsert,* Philadelphia; and your column Editor, *"Stan" Brown.* Limited attendance clinics were presented by the above mentioned augmented by *Dr. Louis Grossman,* Philadelphia; and *Dr. Joseph Hartsook,* University of Michigan; *Dr. Grossman* also presented an outstanding work as speaker for the evening dinner. At various hours during the day and evening, several clinicians assisted selected local committeemen in presenting radio programs.

Much credit for details of the meeting must go to *Miss Leone Gruelich,* the efficient and gracious secretary of the Cleveland Dental Society. *Miss Gruelich* seemed to be everywhere at the right time—reception, registration, luncheon and dinner tickets, transportation arrangements, etc. Yes, boys, she's quite a gal!

It was the writer's privilege to remain in Cleveland an extra day with *Carl* and *Lydia Miller* in their efficient office and their lovely home. Joining in this pleasure was *Dr. George Haymaker,* Sharon, Pa. *George* is one of our newer members but a valuable addition. *"Rube"* is going places in dentistry, and children find a welcome spot in his practice.

Pennsylvania

Yes sir — the Pennsylvania Unit scores again!

Finding there was a deplorable lack of interest in dentistry for children in most parts of the State, the P.S.D.C. "set up shop" at the Annual Greater Meeting of the Philadelphia County Dental Society. A registration table was set up in the lobby of the hotel, manned before, between and after clinics by Secretary *Gertrude Tank.* During clinic hours dental hygienists, who were well instructed in the aims of the Society were in charge. Over the registration table was a sign in large letters "AMERICAN SOCIETY OF DENTISTRY FOR CHILDREN."

Membership application cards were much in evidence. Through the interest aroused by the Journal fourteen new applications for membership were signed.

Participating in the meeting or at clinic tables were several members of the P.S.D.C. Discussing the topic Dentistry for Children were *Drs. Ernest Ritsert, George Thompson, Raymond Werther.* Roentgenology was handled by *Dr. William Updegrave.*

Table clinics were presented by *Elizabeth Beatty, Geneva Groth, Drs. Ralph Omer, Ernest Ritsert, Edward Ray Strayer, William Updegrave.*

All members of the A.S.D.C. will concur with *Secretary Gertrude* when she observed, "The combination of clinics, the personal and direct approach at the desk with the emphasis on the necessity of an increased knowledge of dentistry for children among general practitioners and specialists and the child patient, created an interest that we hope will bear fruit not only by an increasing number of members to our Society, but by promoting and intensifying the interest in dentistry for children among all practitioners."

A note from an old friend, *Dr. Walter Pelton,* says he "has not dug into the details of the President's new health program too deeply," so rather not comment at this time. *Jack* is stationed at U.S.P.H.S. Hospital, Sheepshead Bay, Brooklyn 29, New York. As a "vacation" he is going up to Rhode Island and conduct a "Refresher Course in Dentistry for Children" for some service boys working in the Demonstration Project. I hope *Jack* takes his wife *"Bea"* along as she is a good listener for some of his bed time stories.

On February 17, Temple University in Philadelphia granted a certificate of merit to the senior who was most outstanding in his work in dentistry for children. *Dr. Edward Strayer,* President of the P.S.D.C. had the honor of presenting this award to *James Sullivan.*

Jim, we are proud of you too. We are confident that you will be an outstanding success if you build your practice on the solid foundation of dentistry for children. Children not only build your practice but they stabilize it for a life time of practice.

New Members

New members, sponsored by *Carl Miller* are: *Dr. William Stillson,* Author of Stillson's Anatomy (Dental), also professor of Dental Anatomy at Western Reserve.

Dr. Ralph E. Creig, past president of the Cleveland Dental Society and a prominent leader in organizational work in the local society. Ralph has much to do with the indigent dental care program in the City of Cleveland. He is a tireless worker for the Children's 10547—OWL PTG—Dental Journal 3 Health Day program.

Dr. Norman C. Colebrook, chairman of the laymen's meetings for the Health Day Program and also chairman of the Public Relations Committee of the Cleveland Dental Society. *Norman* is a prominent lecturer on dental care for children before lay groups.

Dr. Herbert Ronacher who has just returned from service and acted as a member of the Health Day Committee. More will be heard from *Herbert* when he gets back into the swing of "home front" dental service.

Personal But Not Confidential

Our friend and ambassador *Walter McFall* is "tending the home fires" these days. *Walter* has preached the gospel of dentistry for children in some 32 states, and now justly feels it is about time that he provides for his own security by giving more attention to his practice.

It is deplorable that Society or Convention funds are such that clinicians are forced to make a personal sacrifice in order to promote the better interests of our profession. To be sure, personal ego is inflated by the first few invitations, but only love for the advancement of our profession could prompt a man to accept engagements in some 32 states.

Dr. Milton Lappin of our Michigan unit and his partner *Al Zerbo,* won the State A.A.U. Handball doubles championship last month. *Milt* and his partner recently captured the national YMCA doubles championship,

too. Evidently orthodontics is not the sedentary specialty most of us think it is!!

Bill Allsup, A.S.D.C. member from Georgia, has opened his office for the practice of Oral Surgery in Atlanta. Good luck, *Bill*—a fellow with your training, ability, personality and good looks should really "go places!"

Walter McBride, and his charming wife *Hilda,* motored down to Florida last month, visiting his and our friends *Doctor* and *Mrs. Howard Burkart* in Coral Gables. *Walter* is appearing at the Newark meeting and the New York State meeting this Spring.

Prexy *Ralph Ireland* attended the meeting of the American Association of Dental Schools at Kansas City in March, as an official representative of the University of Nebraska.

The "reactivated" Michigan unit held its second meeting of the year last month, offering a round table of discussion of problems common to general practitioners and orthodontists. An enthusiastic audience heard *Barney Malbin* moderate the discussion of *Doctors Eddie Martinek* and *Bob Coleman* of Detroit, and *Hunter Miller* of Flint, whom program chairman *Pat Kinder* presented. *President Quinlan* announced a slate of candidates for the Offices of the Unit, and plans for a dinner at the Michigan State meeting in April.

Sandy MacGregor, our friend and dentist for children, in Toronto, Canada, wrote a nice, to-the-point article in the March Journal of the Ontario Dental Association, discussing the responsibility of the individual dentist in regard to "state dentistry." I hope ye Ed finds space to reprint the article in our next issue.

Prominent on the Texas State Program held at Dallas in April were A.S.D.C. members *George F. Bohuslav, Bee Lee Dixon, J. R. Thompson,* and *William Z. Kling* who appeared at the joint meeting of the Texas Society of Dentistry for Children and the Texas Society of Orthodontists.

Elsie Gerlach, our very competent treasurer, is learning about child psychology the "hard way," now that she has adopted a youngster! She claims that there's a world of difference between advising a parent and taking that advice one's self!! Right you are, *Elsie!*

Saw *ex-Commander Lux* at the Chicago meeting. *Konrad* is back in civilian practice again in Waco, claiming even more vociferously than before that there's no country like Texas! Maybe we should let *Gus Edmunds* of our Michigan unit tangle with him on that score. *Gus,* by the way, is still in Korea, sweatin' it out.

Philip Burwasser, erstwhile Fellow at the Walter Zoller Memorial Clinic and Forsyth Clinic is head of the newly formed department of Pedodontics at Western Reserve University in Cleveland. Already possessed of his M.A., M.S., and D.D.S. degrees, *Phil* is working on his Ph.D.

Jim Taub, of the New York unit has asked any of our readers who may know the present address of the following men, to please advise him at 609 Western Ave., Albany 3, N. Y.

Lt. Byron Bailey	Lt. W. Ferderber
Capt. C. J. Hicks	Capt. A. L. Lopez
Lt. M. B. Miller	Dr. F. A. Nemec
Lt. F. A. Poerson	Capt. M. D. Solomon
Lt. Ivan D. Wilbur	Lt. J. C. Trieber

If you like this column personal, but not confidential, why don't you send *your* news to the writer? Only four communications were received for this issue, three of which were forwarded from *Editor Al's* desk. If "Grandma" falls down, or you managed to get away from your office a few days, why don't you let me know? Just *Ithaca, Michigan.* No street address is necessary, and my phone number is one (1). I read my own mail and dictate my letters so don't be afraid to WRITE the news as you know it.

Stanley C. Brown,

Ithaca, Michigan

The Effect of Cerophyl on the L. Acidophilus of the Oral Cavity

By OLIN E. HOFFMAN, D.D.S.
Director of Dental Hygiene, State Department of Health, Des Moines, Iowa.

Introduction

In a news release of the Associated Press dated July 10, 1942, Dr. L. S. Fosdick, O. E. Fancher and J. C. Calandra of Northwestern University, Department of Chemistry, were credited with the statement that if synthetic vitamin K were incorporated in sugar, candy, or gum, it would effectively inhibit dental caries; that when vitamin K was mixed in a test tube with glucose the normal acid formation of caries was prevented for long periods. It stated further that the synthetic vitamin had no effect on the bacteria of the mouth but that the acid prevention was due to the action of the vitamin on one of the phosphates in the saliva.

Discovery and Early Work with Vitamin K

Henrik Dam[1] discovered in 1929 that with certain dietary deficiencies his experimental chickens developed subsutaneous and intramuscular hemorrhages, and coagulation of the blood was delayed. This blood clotting antihemorrhagic factor was later demonstrated to be prothrombin, or vitamin K.

Snell's[3] report on vitamin K in April of 1939 was adopted by the Council of Pharmacy and Chemistry of the American Medical Association.

"The vitamin is confined almost entirely in natural distribution to the photosynthetic portion of plants, occurring in considerable amounts in alfalfa, kale, spinach, dried carrot tops, chestnut leaves, tomatoes and oat sprouts. It can also be found in soy bean oil and some vegetable oils, but not in significant amounts in fish liver oils. It can be prepared from fish meal, rice bran or casein after the extracted materal has been allowed to putrefy. It occurs in some bacteria and may be produced by bacterial activity in the intestinal tract. It is present in the droppings of chicks and in the normal and alcoholic feces of man. Little is known so far about its physical and chemical properties and no unit can be yet established except one of arbitrary and limited value. Clinically it is almost specific in the hemorrhagic manifestations of biliary and hepatic disease, but its indiscriminate use in hemorrhagic diseases of all types should be discouraged, although so far there has been no evidence of toxicity."

Cerophyl is a concentrated form of all vitamins provided by nature in the young cereal plant. Wheat, oats, barley and rye are raised on specifically mineralized soil and the young sprouts are cut when known to contain the greatest content of vitamins. The sprouts are washed and then dehydrated by a flash heat treatment. They are reduced to powder and tabletted for professional use. Ten grams of the A.M.A. Council Accepted product contains A (Carotene) 7000 U.S.P. Units; B_1 (Thiamin) .09 mg.; C (Ascorbic Acid) 35 mg.; G (Ribo-Flavin) .25.; K 1.5 mg.; Grass Juice Factor, Rich Source; Chlorophyl (a non-vitamin factor 75 gm.

Uses of Cerophyl and Vitamin K

Cerophyl has been found particularly useful in increasing prothrombin levels in cases of jaundice.

Rhoades[4] reported on the results of the treatment of fourteen cases of carcinoma, catarrhal or obstructive jaundice in four philadelphia hospitals. Grass in the form of cerophyl was fed daily in amounts of 15.0 grams for an average of six days prior to surgery. In

all save one case the operations were successful in that no hemorrhagic phenomena occurred.

Dam[5] and his associates say that in normal children an avitaminosis K, usually moderate, develops in the first days after birth and usually disappears after a week. This avitaminosis K causes a hypoprothrombinemia which must be regarded as the cause of the common slight hemorrhagic diathesis in the newborn. Whether or not jaundice is present seems to be without significance. The avitaminosis is assumed to be due to a deficient supply of vitamin K through the intestine. In some cases of icterus gravis of the newborn, anemia of the newborn, and congenital dropsy, considerable hypoprothrombinemia is established.

Since the administraion of vitamin K in two of their cases was followed by a rapid rise in prothrombin, the authors conclude that there was an avitaminosis K in these cases. A complete lack of prothrombin established as early as twenty-four hours after birth is ascribed to reasons other than deficient resorption from the intestine.

Regarding the prothrombin or vitamin K of banked blood, Quick[6] states, "Evidence indicates that the prothrombin of decalcified blood diminishes on standing and supports the conclusion of Rhoads and Panzer that stored blood is inferior to fresh blood for controlling bleeding in jaundice."

Possible Uses of the Antihemorrhagic Factor of Cereal Grasses in Dental-Medicine

Gordon[7] states that hemorrhage occurs in cancer, agranulocytic anaemia, erythemia, hemophilia, leukemia and purpera of the mouth.

Although it is well known that hemophilia follows a genetic pattern and probably would not respond to therapy, it is possible that a vitamin K deficiency is associated with some of the underlying factors of these other diseases.

Dentists do not routinely observe the hemoglobin or clotting time of the blood preliminary to oral surgery but perhaps the agonizing cases of post extraction hemorrhage warrant the observation of these items in at least the suspicious cases, and since the prothrombin levels can be built up so quickly it would seem that dentists could advise such therapy on numerous occasions.

Cerophyl, Vitamin K and Dental Caries

On May 31, 1942 the Kansas City Star carried a news picture of the Charles F. Schnabel family, 350 City Park Drive, Kansas City, Kansas, under the caption of, "A family thrives on vitamin rich grass." The news item stated that for eleven years grass had been added to the diet and that no tooth decay had been observed in the six children ranging in age from 9 to 18 years.

At least four or five variable factors could have been at work to produce the low susceptibility or immunity to dental caries in this family. Heredity, diet, quality of tooth structure, fluorine in water supply during the first seven to nine years of life and last but not least, a low sugar intake. Reports were received by the writer indirectly from Dr. Schnabel to the effect that the family at present was using only four of its sugar rationing coupons although the seven members were entitled to seven and that their sugar consumption during the eleven year period was very much as it is at present. It was learned further the family had been on fluorine free water during this period but had utilized liberal quantities of dairy products, vegetables and fruits which undoubtedy would aid the development of sound tooth structure.

Sugar, a Factor in Tooth Decay

The Dental Caries Research Group at the University of Michigan has contended for a long period of time that refined sugar in any form is a leading factor in tooth decay. Michigan studies of Bunting, Hadley, Jay and others have been of such high quality that they convinced McCollum, Tisdall, Fosdick, Simmonds, Becks and other leading scientists in this field of dental research, the validity of their claims.

Jay[8] refers to the classical studies of Miller as the outstanding contribution in the field of dental research. In a series of ingenious yet simply outlined experiments he demonstrated that there exists in saliva a substance which

can break down carbohydrate to form lactic acid. He assumed that this was a bacterial process, since the reaction was inhibited by boiling and did not take place when the saliva was treated with an antiseptic. Acids thus formed by the fermentation of carbohydrate on the surface of the tooth resulted in the initial lesion of enamel caries. That, in brief, is essentially the "Chemico-parasitic" theory of dental caries as formulated by Miller. The hypothesis has been challenged by many but remains substantially unaltered today.

The Michigan[9] group states that sugar is a very important causative factor in caries. A remarkably low degree of caries was observed in children on a low sugar diet deficient in calcium phosphorus and vitamin D. Active caries was induced in children by increasing the sugar intake while they were receiving a diet that was nutritionally adequate. Ingestion of low sugar diets by children is conducive, as a rule, to freedom from caries. The most constant differential between caries free and caries susceptible persons thus far demonstrated, is that of the relative number of L. acidophilus organisms in the mouth. This correlation is approximately 90 per cent positive.

To make the work at Michigan statistically sound a quantitative method for the determination of the number of lactobacillus acidophilus organisms (caries producing bacteria) per cubic centimeter of saliva was developed and reported by Hadley[10] in 1933.

This measuring stick of caries susceptibility has been in use since that time and bids well to become the most useful bacteriological laboratory facility in the field of public health dentistry.

Saliva Samples

A prospective patient whose saliva is to be cultured is requested to chew a piece of paraffin for three minutes, preferably before breakfast and expectorate in a small wide-mouth auto-claved bottle. The bottle is sealed and the patient's name, age, time of specimen and date recorded thereon. The dentist mails the sample to the bacteriological laboratory where the saliva is diluted and cultured at once on a tomato agar plate, the media of which has been adjusted to a p H value of 4.5 to 5. At this p H only the growth of acid producing organisms is permitted.

The plate is then incubated for three days at 37° C. and the colonies are counted. If the bacterial count is high, 100,000 to a million, the patient is proportionately susceptible to caries activity whereas if the count is under 1,000 a very low degree of susceptibility exists.

The chief interest in this study was to test the cerophyl of known natural vitamin K potency to see what effect, if any, would occur in the L. acidophilus of the saliva using the laboratory technic as a yardstick.

Although Fosdick and co-workers stated the synthetic vitamin K had no effect on the oral flora, the writer was curious to learn whether the natural vitamin K would alter the enzyme system of the saliva in such a way as to reduce the number of the L. acidophilus organisms.

The Study

The basal L. acidophilus counts of the saliva were obtained by the method of Hadley and Jay on ten patients ranging in age from 12 to 45 years.

Case No. 1. Male, age 45 years, basal count 150,000. On unrestricted carbohydrate intake, count rose rapidly and decreased proportionately with the reduction of carbohydrate. When .5 gram of cerophyl was added to saliva, a notable drop in L. acidophilus occurred.

Case No. 2. Male, age 35 years, basal count 200. Increased consumption of carbohydrate and sugars caused rapid increase in L. acidophilus count to 300,000, and when restricted, a rapid drop in count occurred. There was a slight elevation in the count when .5 gram of cerophyl was added to saliva.

Case No. 3. Male, age 45 years, basal count 450,000. Made no dietary changes except addition of 5 gram of cerophyl to daily diet. Count rose rapidly to 1,000,000 + in two weeks.

Case No. 4. Male, age 40 years, basal count 400. Increased carbohydrate and count rose to 12,000. When carbohydrate was decreased, there was a sharp drop in L. acidophilus which was further decreased by

addition of .5 gram of cerophyl added to saliva.

Case No. 5. Male, age 42, basal count 3,000. When carbohydrate intake was increased, during first week there was an increase of L. acidophilus and a decrease following a reduction of the carbohydrate intake, which was augmented by addition of .5 gram of cerophyl to saliva.

Case No. 6. Female, age 35 years, basal count 7,500. Added 6 grams of cerophyl to daily diet. L. acidophilus count showed a drop to 500 the first week, rose to 2,500 the second week, and dropped to 1,000 the third week.

Case No. 7. Female, age 42, basal count 2,600. Count dropped markedly on restriction of carbohydrate intake during second and third week, then rose sharply when cerophyl was added to saliva.

Case No. 8. Male, age 34 years, basal count 200 L. acidophilus and 1,200 yeast. When 5 grams of cerophyl were added to the diet and no other dietary changes were made, there was a slight rise in L. acidophilus and a proportionate rise in the yeast count.

Case No. 9. Male, age 12, basal count 50. Cerophyl in 5 gram amounts added to the daily diet. No restriction, but rather a heavy increase in sugar and starch intake over the entire period. There was no increase in the count. In fact, counts taken on August 1 and 4 were negative. Only one or two colonies of streptococci were noted during entire period. There was a complete absence of L. acidophilus at any ime. Natural immunity seemed to be present; possible small amount of fluorine in teeth as central incisor has a white spot on incisal 1/3.

Case No. 10. Male, age 43, basal count, 7,200. Cerophyl added to daily diet in 5 gram amounts. A slight rise was followed by a decline and later a marked increase was noted, the count rising to nearly 100,000 by August 1. A large number of intermediate colonies was noted following retention of cerophyl in the saliva for seven hours.

Summary

In a study of ten cases ranging in age from 12 to 43 years, the L. acidophilus counts of the saliva were observed to rise sharply when the carbohydrate intake was increased and to fall proportionately when the carbohydrate intake was decreased in a like manner.

Four cases showed an increase and four cases a decrease in L. acidophilus when .5 gram of cerophyl was added to the saliva.

Three cases showed an increase and one a decrease in L. acidophilus counts when cerophyl was added to the daily diet in 5 gram amounts.

One case, when carbohydrate was markedly increased and cerophyl was added daily in 5 gram amounts showed no L. acidophilus or yeast and only one colony of streptocci during the entire study. It is safe to assume that this case was a natural immune.

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Child Psychology That Pays

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Editor's Note:

Our Canadian friends are playing a major role in this issue of the Journal, what with Roy Ellis and Sandy MacGregor contributing.

Sandy is touring Western Canada the latter part of April, putting on a series of courses for the C.D.A. and Canadian Hygiene Council along the lines of this paper we are printing. Although you may not agree with everything Sandy writes, you must admit his approach to the problem is practical and useable.

A.E.S.

This title, "Child Psychology That Pays" might be interpreted in two ways. First in managing a child in the dental office, one must use an approach that will pay dividends by suggesting to the child that the dentist is at all times in full command of any situation that might arise. Secondly one must use an approach that will allow you to make a living.

A great deal has been written about child management in the dental office, and much of our literature I am afraid has frightened the general practitioner rather than helped him. A playful time-taking approach has been generally recommended. We are told to get down to the child's level, take him by the hand, show him the laboratory, show him the lathe, show him the sterilizer, and in fact everything about the office but the book-keeping system. Some suggest play-rooms and others offer bribes, such as plaster models, clubs, etc. All this I am afraid has a tendency to make the general practitioner feel that if he has to do this to make a living then he will do prosthetics and "let George" do the children's work. For a number of years in my practice I followed such procedures, and although I met with fair success, it was hard work because of the nervous tension. As I look back now, I feel that the child was in control most of the time and from an economic standpoint, working for children was a failure because of the additional time spent on it.

After fifteen years of practising for children, it is my firm belief that if you ask a child to look up and respect you on the first appointment, rather than lower yourself to his level, your chances of success will be greater. I do not wish to be misunderstood by this statement; I do get down to their level in a playful manner but after I have succeeded in impressing them that I am in command of any incidents that may arise in the office. It has also been my experience that when I took the child on a tour of the office, he frequently became so familiar with this new environment that he felt that he had greater privileges. Not only is this method impractical from the psychological standpoint but it is impossible from an economic point of view.

I asked a kindergarten teacher once what she did when a child, accompanied by the mother, came to school for the first time but refused to stay. She replied, "but we expect him to stay." That sums up my attitude towards the child on the first dental appointment. I take an expect-him-to-behave attitude, and he very soon senses it no matter how young he may be.

My approach to a small child on a first dental appointment is as follows. While the nurse is preparing the operating room, I make it my business to open the waiting-room door, say "Hello" to the mother and for the moment slightly ignore the child, but before leaving say "Hello son," "dear" or make some such friendly gesture. The child has met me in an environment similar to his own home, and not amidst possible objects of fear such as the dental chair, x-ray, etc. An over-demonstrative approach either on the part of the dentist or the nurse should be avoided at all times,

and most particularly on first meeting the child. A gushing attitude is liable to suggest to the child that there is a 'catch' in it somewhere. The nurse invites the mother and child into the operating room, and this being accomplished leaves immediately. The mother will likely *ask* the child *if he will* get up in the chair. If he is a well-behaved youngster, as most children are, he will do so on this request and all will be well, but in some instances he will answer, "No." The mother then will attempt to lift the child into the chair and this is where I enter the picture. When such a situation arises, I tell the mother to remain for a few moments, but that she may have to go to the waiting-room. I then in a firm voice and with just as firm an expression, tell the child to get up in the chair. If he refuses then the mother is told immediately to go to the waiting-room but not to worry as no corporal punishment is intended. The procedure is repeated with an even more severe stare. If more dentists would curb their tongues and their tempers and instead use their eyes to control children, their success would be greater. Posture at this point is a very important one. Stand up to be seen. No matter how firm your attitude might be, if you slouch while portraying such—failure will be the end result. If a dentist is forced to lift a child into a chair, then all the persuasion in the world will not make him open his mouth later and submit to a proper examination. But if by your command you are able to make him get up into the chair on his own, then you are in full control of the situation. The child will realize this and voluntarily open his mouth. So far this system has never failed. If the mother hesitates to leave the room, I ask her if at school the board of education would allow her to sit in the class-room while the school teacher attempts to condition her child to the new environment. Any intelligent mother will see the point and leave immediately. A child can attend to one situation or one individual at a time, and if the mother is trying one system of discipline and you another, all you can expect is confusion and failure. The same is true in respect to the nurse, so that she enters the operating room only on call. I never allow a child of three or four years of age to be left alone in a room. When I go out, I ask the nurse to come in and stay until I return. Generally speaking the mother is never invited into the operating room after the first appointment no matter what type the child may be.

In dealing with small children one must remember two of the basic causes of fear; sudden loud sound, and sudden loss of support. No matter what temperament the child may have—good or bad—as soon as I have him under control, before attempting to use the drill, I always place a rubber cup in the hand-piece and administer it to the tooth to be filled. The rubber cup is replaced by a burr, and the action repeated but the child is told that this will make a little harsher sound, and that it may hurt a little. Very often a child will be badly upset because the dentist tilts the chair without telling him. He then gets a 'going down in the elevator' feeling and fear is the result.

I do not believe in holding a child or using the so called "towel" method. To me this is an admission of defeat. Restriction of movement is one of the basic causes of fear, and such methods in this modern age do not uplift our profession in the eyes of present-day educationalists. We must be honest and frank with children. If we are truthful, they will respect us. If we are poor disciplinarians, we will lose their respect. I have often heard the teacher who has failed as a disciplinarian called a "jerk" or some such disrespectful title. When I have succeeded in impressing the child with the fact that it is I who gives the orders in the dental office and not the mother, I feel it is safe to gradually work around to a more playful and light-hearted attitude, but still with that reserve that makes the child realize that I am always in readiness to take command at any time. As each appointment comes around the child realizes that I am firm yet kind, and in the majority of cases willingly enters the operating-room alone when called by the nurse. If he is a little hesitant, I put in an appearance and usually a stare in one eye will do the trick. I learned the "stare" method from a deaf and dumb parent. The

way that they control their children with the eyes is really amazing. Our failure in handling difficult children is often due to the fact that we lose our tempers and shout like mad men. This can result in only one response from the child—anger and a desire to fight back. George Bernard Shaw says, "Anger blows out the light of the mind." To be successful we must also be firm with the parents, and as time goes along warm up to them gradually.

Probably the extreme case, the problem child, is what worries most dentists. The statement that there are more dentists afraid of children than children afraid of dentists is a very true one. For a number of years, particularly when I took the playful approach to children on their first appointment, I found myself hating to go back to work after lunch for an appointment with a young child that might be difficult. However, today whether it be experience or a new technique, I can truthfully say that all fear has vanished with respect to my work in dentistry for children. Up until a few years ago, I always recommended that children have gas anaesthesia for the extraction of even one tooth. Today I use local anaesthesia even on young children, except in multiple and infected cases. Some years ago I was giving a paper at the children's congress in Quebec City: I was talking about causes of fear, elimination of fear, etc., when one of the dentists with a strong French Canadian accent told me that in his town the children didn't know fear. They called him the "sleep doctor." He gave all children general anaesthesia, even for operative work. It occurred to me then—and I told him so—that the fear was in him, not in the children of his town. Anaesthesia was an escape method. It dawned on me then that that was what was wrong with me when I avoided extracting for children. The extraction specialist was my escape, the fear was in me. This was impressed still further when in another audience sometime later, someone asked what were the general practitioners to do when there were no exodontists to send the children to. I immediately felt that I must find the answer to this question. I did so by 'taking the bull by the horns' and going ahead and doing it myself. From that day I have been using local anaesthesia for extractions and my success is due to first, getting control of myself, and secondly, demonstrating that attitude in front of the child.

What about the difficult problem child that has visited all the dentists in the neighborhood? When a mother calls and tells me that she has a particularly nervous, high strung, sickly child, etc., etc., and the previous dentist couldn't perform any dental treatment, I follow this procedure. I ask her to tell me all about the previous incidents and in so doing she usuall exposes her own weaknesses to me. She tells me that she couldn't possibly leave the operating-room, for the dentist was this, that and the other thing. Then I start in by telling her that I will accept the case on one condition and that is that the child must be under my jurisdiction from the time he enters the waiting-room door. She is told that the mother is never allowed in the operating-room, and the child will not be slapped, gagged or mistreated in any way. Usually there will be a lull on the other end of the phone. I then explain that if this procedure is not agreed to, my time, their money is being wasted, and I would rather that they would not make an appointment. Those who don't make an appointment are few and you are well rid of them. The mother is warned beforehand that the child may have to be carried from the waiting-room but once out of sight of the mother he is placed on his feet, and the method previously described carried out. If the mother interferes, then I refuse to go any farther, and again in most cases they take a back seat. When such a child gets into the chair he usually cries loudly, kick and uses his hands freely. With a steady stare look him straight in the eye and then commence looking into his mouth. He will put up his hands, but don't slap them for that would be breaking faith with the parent. I usually clasp the hand in mine and in a quick throwing motion force it into his lap. You will find that about the time you have him quiet enough to make an examination, he will in a painful tone advise you that he must go to the wash-room. Allow him to go once and then tell him not to bring

that subject up again. If he does so, tell him you are agreeable but he is not leaving the chair. So far I have not met with any disagreeable misfortune and I have won a victory. When he sees that this has failed, his next effort to control the situation will be to attempt to vomit. Have him hold a kidney tray under his chin and tell him to use it if necessary. He will soon get tired of holding the tray and realizing that he is defeated, will submit to treatment.

When a child visits my office for the first time, I always carry out some dental operation. If he has good teeth with no visible cavities then I take bite-wing x-rays and a prophylaxis. If he has visible cavities, no matter how small the child, I take bite-wing x-rays and do a restoration. Some believe in doing nothing the first day, and sending the child home particularly if he refuses to get in the chair. In my opinion if we let him out of the office after they have refused to co-operate, then they have won the first round, and the second appointment will be more difficult. If the mother refuses to co-operate and suggests that she control the child, I usually step aside and tell her to get the child in the frame of mind that will permit dental treatment without the least movement. They usually try and when they have failed miserably, I smile and ask them to go to the waiting-room and let someone with experience take over.

In closing let me remind my readers that I am not a hardboiled old "so and so" who spends all day scowling at children; on the contrary I love children and would rather work for any child no matter how difficult than for the most co-operative adult. My days are full of pleasures because of my association with children, but I have been prompted to write this paper in an attempt to counteract many of the time-wasting, commercialized methods that are recommended in managing children in the dental office. Everywhere I go I hear from the general practitioner, "I would be willing to work for children if I had the time to play around with them." Those of us who are attempting to encourage more dentists to work for children must show them how it can be done economically and it can't be if we recommend a 'Cooks Tour' for every child that enters the office.